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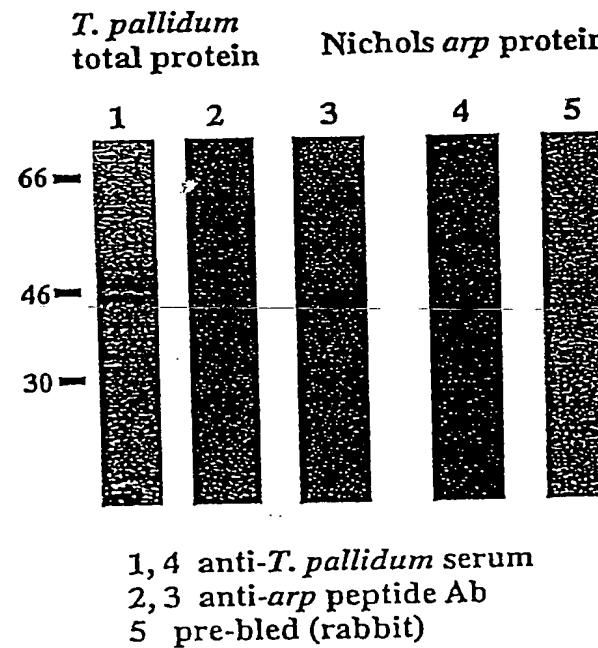


FIGURE 1

Characteristics of the arp protein

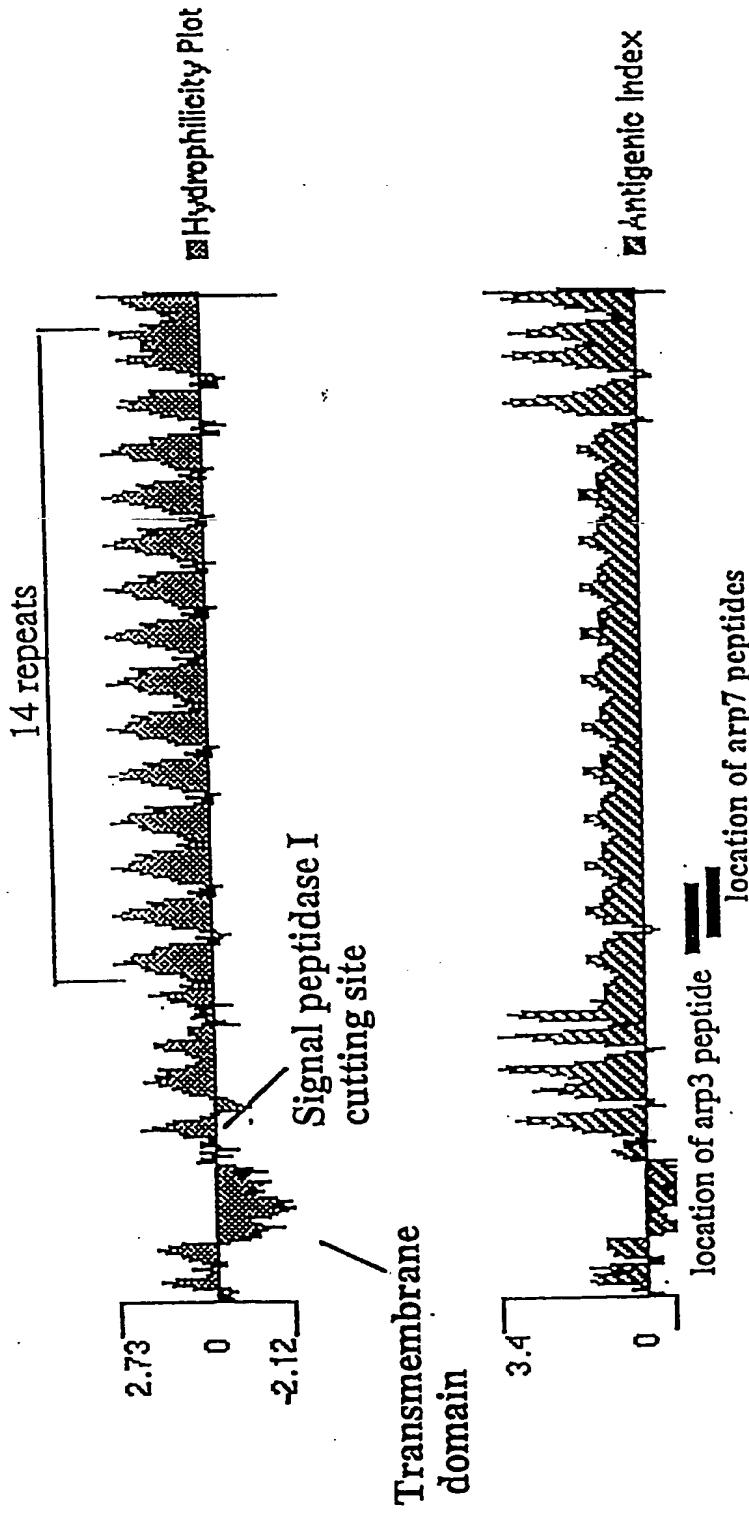


FIGURE 2

APPROVED
BY
DEPARTMENT

Inventor (s): Liu et al.
Express Mail No.: EL874428941US / Date of Deposit: December 34, 2001
Title: POSITIONS AND METHODS FOR DETECTING TREPONEMA SULIDUM
Attorney's Matter No.: 6395-61666/TMH/DJZ
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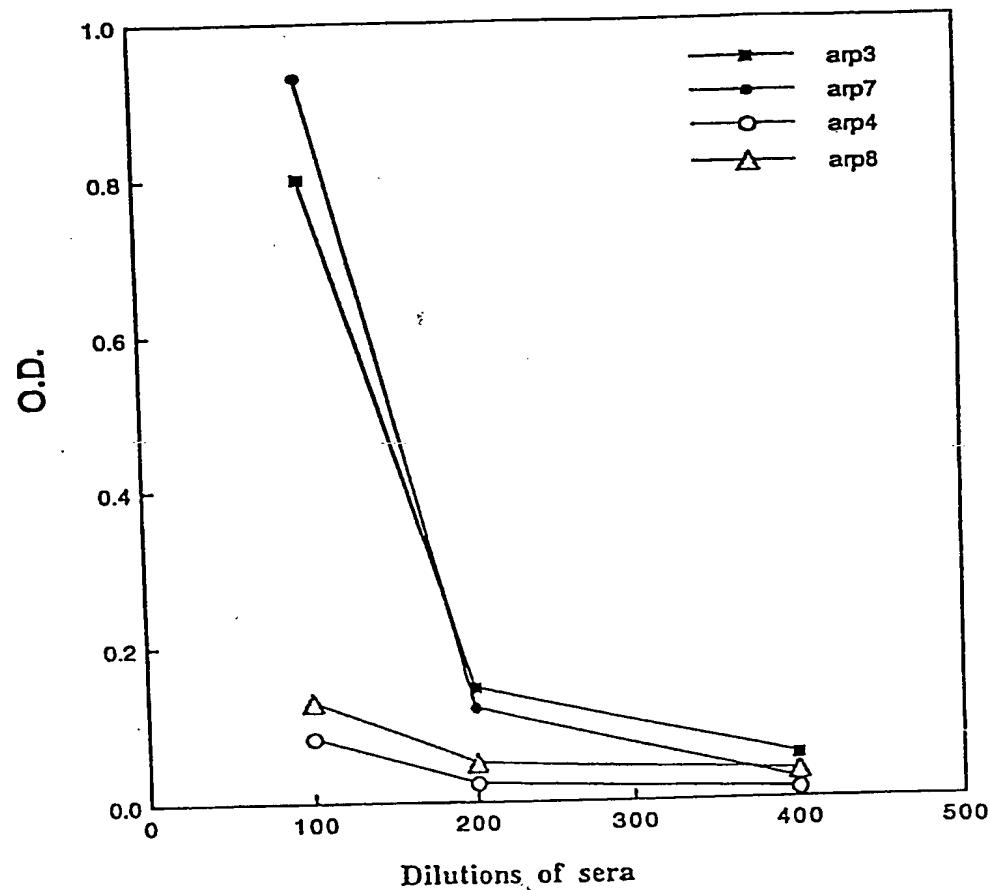


FIGURE 3

**Detection of anti-arp antibody
in human serum using peptide arp#3**

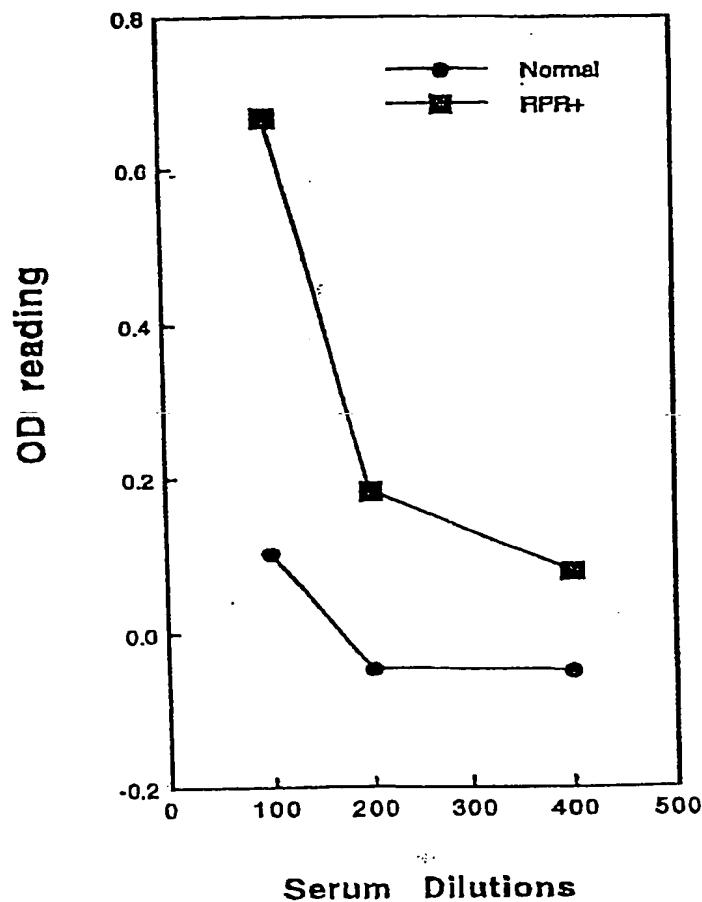


FIGURE 4

GTGATGACAC AGCTGACGCT CTCAGGTCT GCACATATTG CGGGGCTGGT GCGACATCT
CTCTGCCCCC CTGCTACAGT GTCAGGTTCA TCGGGGAATT GAGGAAACTG TTATCGCGC
TCCCCATCTT CCGATACTGG ATCGGTGTGG GGGGGAGTAG GAGTGGGGAA GCGCTGTGC
TGTATCGGC TGTTGATGCG CGCGTTCTGG TACCTCAGTG CGAAGGGAGT CAGTATCGCT
TACGTGCCCG TTCATCGCAG TGGGGGCTCT CAAGATTGCA GCATGAGCAC AGCAGTGGGC
GATACTGCTCC TTAACGCCCTT CTTCGACGAG GGAATGGTGG TTACGGCAGT ACGCGOOGGGT
GTACACGACG GCCAGACTAT AGCAGAAAATT GCTGCATGTT TTGAAGTAAT GCGCGATTAC
GCGTTGTGG TGCACTTCA TTCCGCTCGT CTCCCTGGTG GGGAAAGCGC TACCTCCCGT
GCGGGGGGG CTTGGTCTTC AGAGAGGTTG CGTGCTGTG TGACATTAGT GGATTTGCAT
ACGCGCGCG CGTGTGTCTA TGCGTGTGTC GCCCCATACA GGGAGAGTAT TCCCGTTCT
GAGTGTGTG ACGTCGTTAC CGGTTGTATT GCGGAGCAGG CAATTCGTA CATACGGGTG
GGCACGAGCA CCGATACAGC CGGAGTTCAAG TTATAGAAAA TAGGGAATAC GTAAGGTGTC
TGCAGCGTCG CTTCAGCTGG GAGGAGTCTT ATGATTAAAC GCCACATGTT CGCAAAAGG
GGTGTCAAAG GAAGATCTT CCTGGTTAGG GTAACACTG CGTTCTTAGT GCTTTGTGTT
GCTTCTGTCA CGCCGCTTGTGG GAAGGGAAATG CAGAAATTGG CGGGCAGGG
AGTTTCTGC AGGAAGGC

GG GGGAACTOCC CTTACGCTC CCTGACCTAT CCGAGTCAGA AATTGTGGTT CGCGAGGAAAC
AGAAAGGACG TGCGCATOCC CAGGTGATAC CGGAGGGTGC GCCACGTGGA CTGCAACCTG
GTGAATACTA CGTACAGATT GCAGTCTTC ATGACCGCTAT CCAGGTGCAG AGCATTGTCC
ACCGTTACGG GGTAGAATAC CCCATCGCAG TGGAGCAGGA CATCCATGAA GTTAAGGTGC
GTTTCACCGT ATGCGTGGT CCTGTCCAAA AAGACGAACG OGGOGOGGTA CTAGAGAACT
TCCAAAGGTT TGGATTCAAG GACGCCCTTC TGAAAAAAGGC GCGATGATCA GGTGGGOCCT
CCTCTTCCCCC TCGTGACCGT GGTGACTOGC COOGAAGGGG GCGCACAGAG CCCGAAGGAA
CGGAAGGGAA GGGGCAGACT TAACTATTC TTTGTTTTTG TGAGCACGTA AAACGGGCGCC
ATCTCCTTGT AAGGCTTCC TCGCGCGGGG GCGGCCATGT AGCGAACGGG GTTACTGTCT
ATCAGCTCGT ACAGCTCTT CTGCGGGT GCCTTCGATT GCTCGGAGGA CACAAGCGAG
AGTTCGACAA TTCCGCTTC ACGTACCATC CACGTACCGC GATACTAAG AGGAGAAGGT
GCCGACTTCT TCTCAAGGGC AAGCTCTACC TTTGCGCAG TGCCATCCGC GTTGAACGTC ACAGT

FIGURE 5

T. pallidum ssp. *Pallidum* (Ni)-*arp* protein sequence

MFVRSDFPK NTAVEISNLE KNAKAQAVVI GHAGIPGLLV SLAPAAAQL
 GIGVYQAVRV RVRTLGTVRG GSQTSQDGLS LASLPSRVPVPA RPAQRDPLSS
 PPAAGHTVPEY RDTVIFDDPR LVSPLSR

EVE DAPKVVEPAS EREGGER 13, 14
13, 14
6
Type IV:
Type III:

EVA SQHTKQPSHS VNSAPNQFR KP

FIGURE 6

T. pallidum ssp. *Pertenue* (CDC-2) nucleotide sequence

ATGTTGTGC	GCAGTGTACAT	GTTCCCCCAA	AACACTGCTG	TTGAAATTAG
CAACTAGAA	AAGAATGCCA	AGGCTCAGGC	AGTGGTTATT	GGGCACGGAG
GGATCCCCGG	TCTTCTAGTT	AGCCTTGCAC	CCGCTGCTGC	AGCACAGCTT
GGGATTGGCG	TATACCAAGC	TGTGGCTGTA	CGCGTACGTA	CCTTGGGTAC
CTTGGGGGT	GGGTCTAAA	CAAGTCAGGA	CGGACTGTCC	CTTGCATCTT
TGCCGTCCCG	TGTGCCCTGCG	CGCCCCGCGC	AGCGTGATCC	TCTGTCATCC
CCGCCCCGAG	GTCACACTGT	ACCGGAATAT	CGCGATAACGG	TTATITTCGA
TGACCCGGGT	TTGGTTTCCC	CTTGTCTCG	TGAGGTGGAG	GACGTGCCGA
AGGTAGTGGA	GCCGGCCCTCT	GAGCGTGAGG	TGAGGTGGAG	GAGGGGAGCG
GACGTGCCGA	AGGTAGTGGA	GCCGGCCTCT	GAGCGTGAGG	GAGGGGAGCG
TGAGGTGGAG	GACGTGCCGA	AGGTAGTGGA	GCCCCCTCT	GAGCGTGAGG
GAGGGAGCG	TGAGGTGGAG	GACGTGCCGA	AGGTAGTGGA	GCCCCCTCT
GAGGCGTGGAG	GAGGGAGCG	TGAGGTGGCT	TCTCAGCATA	CGAAAGCAGCC
ATCCCCACTCG	GTTTCCAACT	CAGCTCCCAA	TCAGTTTCGG	AAACCTGA

FIGURE 7

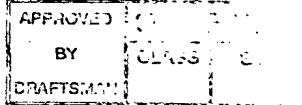
T. pallidum ssp. *Pertenuie* (CDC-2) *arp* protein sequence

MFVRSDMFPK NTAVEISNL KNAKAQAVVI GHAGIPGLLV SLAPAAAQL
GIGVYQAVR RVRTLGTVRG GSQTSQDGLS LASLPSRVP A RPAQRIDPLSS
PPAGHTVPEY RDTVIFDDPR LVSPLSR

EVE DVPKVVVEPAS EREGGER
EVE DVPKVVVEPAS EREGGER
EVE DVPKVVVEPAS EREGGER
EVE DVPKVVVEPAS EREGGER

EVA SQHTKQPSHS VSNNSAPNQFR KP

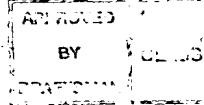
FIGURE 8



T. pallidum ssp. *endemicum* (Bosnia) nucleotide sequence

ATGTTTGTGC	GCAGTGTGACAT	GTTCCCCAAA	AACACTGCTG	TGAAATTAG
CAACTTAGAA	AAGAAATGCCA	AGGCTCAGGC	ACTGGTTATT	GGGCACGGAG
GGATCCGG	TCTTCTAGTT	AGCCTTGAC	CCGCTGCTGC	AGCACAGCTT
GGGATTGGCG	TATACCAAGC	TGTGGCTGTA	CCGGTACGTA	CCTTGGGTAC
CGTGGCGGT	GGGTCTCAA	CAAGTCAGGA	CGGACTGTC	CTTGCATCTT
TGCCGTCGG	TGTGGCTGGC	CGCCCCGGC	ACGGTGATCC	TCTGTCATCC
CGCCGGCAG	GTCACACTGT	ACCGGAATAT	CGCGATAACGG	TATTTTCGA
TGACCCGGGT	TTGGTTTCCC	CTTGTCTCG	TGAGGTGGAG	GACGTGCCGA
AGGTAGTGGA	GCCCCCTCT	GAGCGTGAGG	GAGGGGAGCG	TGAGGTGGAG
GACGTGCCGA	AGGTAGTGGA	GCCGGCTCT	GAGCGTGAGG	GAGGGGAGCG
TGAGGTGGAG	GACGTGCCGA	AGTAGTGGA	GCCGGCCCTCT	GAGCGTGAGG
GAGGGGAGCG	TGAGGTGGAG	GACGTGCCGA	AGTAGTGGA	GCCGGCCCTCT
GAGCGTGAGG	GAGGGGAGCG	TGAGGTGGAG	GACGTGCCGA	AGTAGTGGA
GCCCCCTCT	GAGCGTGAGG	GAGGGGAGCG	TGAGGTGGAG	GACGTGCCGA
AGGTAGTGGA	GCCGGCTCT	GAGCGTGAGG	GAGGGGAGCG	TGAGGTGGAG
GACGTGCCGA	AGGTAGTGGA	GCCGGCCCTCT	GAGCGTGAGG	GAGGGGAGCG
TGAGGTGGAG	GACGTGCCGA	AGTAGTGGA	GCCGGCCCTCT	GAGCGTGAGG
GAGGGGAGCG	TGAGGTGGCT	TCTCAGGATA	CGAAGCAGCC	ATCCCACTCG
GTTCCAATC	CAGCTCCAA	TCAGTTTCGG	AAACCCCTGA	

FIGURE 9



T. pallidum ssp. *endemicum* (Bosnia) *arp* protein sequence

MFVRSDMFPK NTAVEISNLE KNAKAQAVVII GHAGIPGILLV SLAPAAAAQL
GIGVYQAVRV RVRTLGLTVRG GSQTSQLGGLS LASLPSRVPA RPAQRDPLSS
PPAGHTVPEY RDTVIFDDPR LVSPSLR

EVE DVPKVVVEPAS EREGGER
EVE DVPKVVVEPAS EREGGER

EVA SQHTKQPSHS VSNNSAPNQFR KP

FIGURE 10

arp #1
SEQ ID NO: 7 LVSPL REVEDAPKVVEPAS-

arp #2
SEQ ID NO: 8 -SR-EVED APKVVEPASEREGG-

arp #3
SEQ ID NO: 9 -PK VVEPASEREGGEREVEDA-

TP-arp #4
SEQ ID NO: 10 PKNTAVEISNLE KNAKAQAVV

TP-arp #5
SEQ ID NO: 11 GHAGIPGLLV SLAPAAAQLGIGVY

TP-arp #6
SEQ ID NO: 12 VPA RPAQRDPLSS PPAGHTVPEY RD

TP-arp #7
SEQ ID NO: 13 VVEPAS EREGGEREVE DVPKV

TP-arp #8
SEQ ID NO: 14 VVEPASGHEGGEREVA SQHT KQPSHS

TP-arp #9
SEQ ID NO: 15 EVEDEVPKVVEPASEREGGER

TP-arp #10
SEQ ID NO: 16 EVENVPKVVEPASEREGGER

TP-arp #11
SEQ ID NO: 17 EVEDEVAPKVVEPASEREGGER

TP-arp #12
SEQ ID NO: 18 EVEDEVPGVVEPASGHEGGER

FIGURE 11

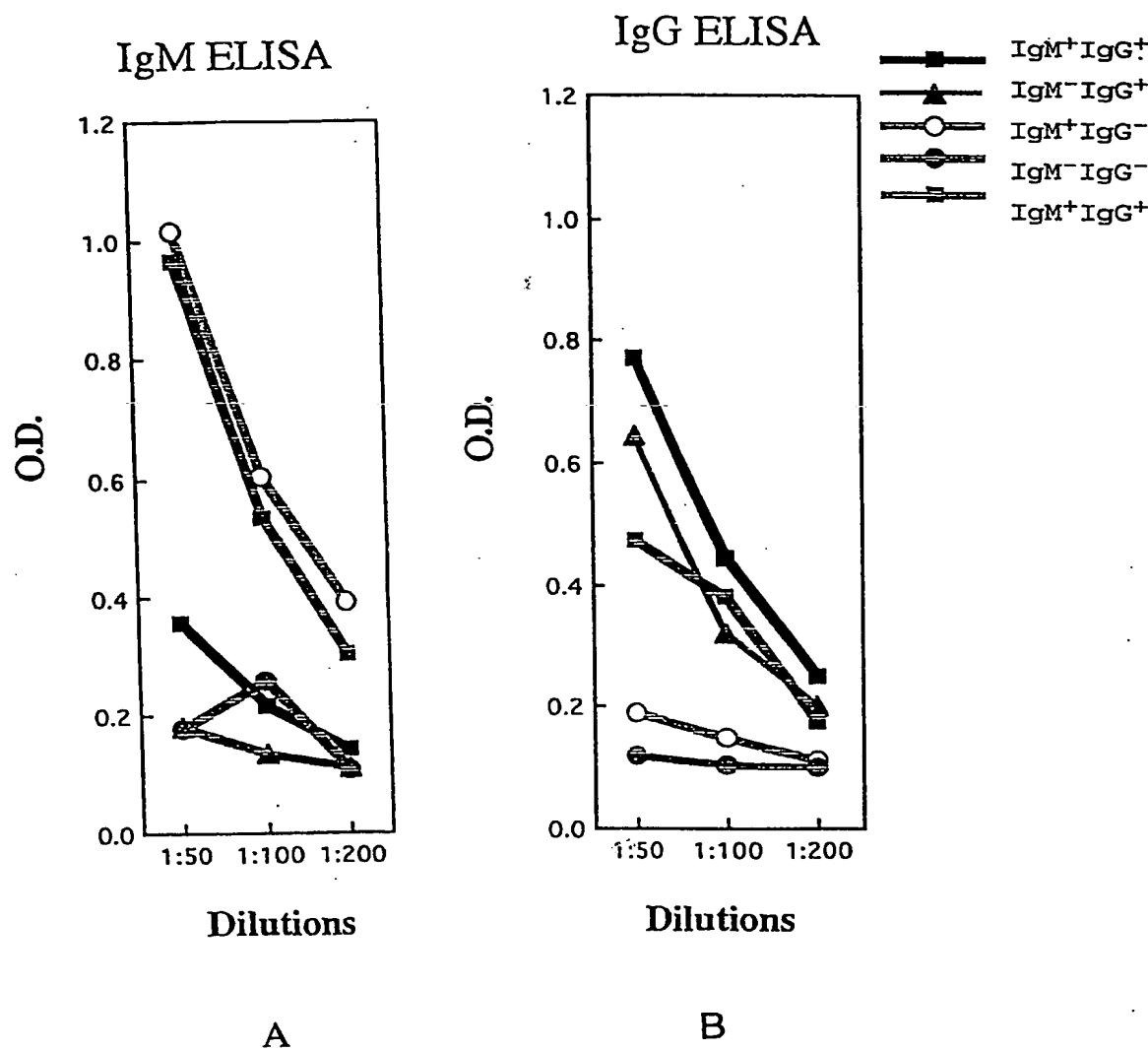


FIGURE 12

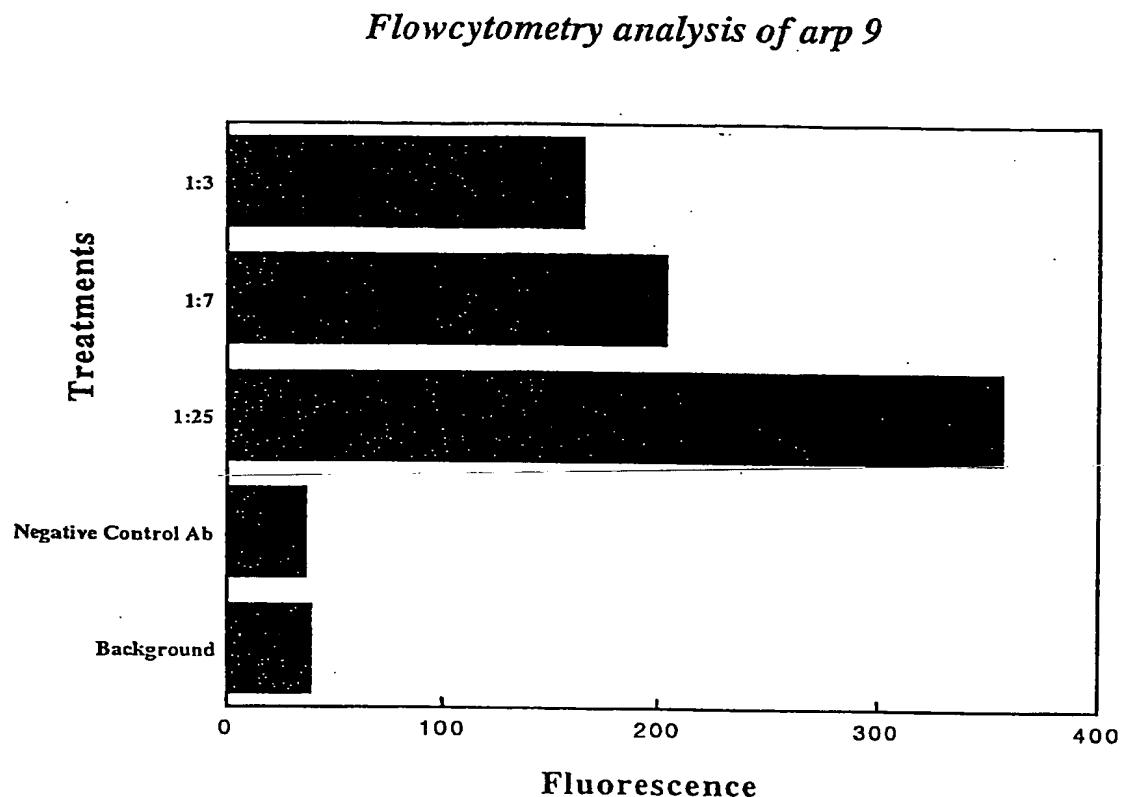


FIGURE 13

APPROVED	FIG.
BY	CLASS
DRAFTER/IAN	SUBCLASS

FIG. 14

T. pallidum subspecies. *pallidum*, Nichols strain

MFVRSDMFPK NTAVEISNLE KNAKAQAVVI GHAGIPGLL V SLAPAAAQL
 GIGVYQAVRV RVRTLGTVRG GSQTSQDGLS LASLPSRVPA RPAQRDPLSS
 PPAGHTVPEY RDTVIFDDPR LVSPLS

REVEDAPKVVEPASEREGGE
 REVEDAPKVVEPASEREGGE
 REVEDVPKVVEPASEREGGE
 REVEDAPKVVEPASEREGGE
 REVEDVPKVVEPASEREGGE
 REVEDAPKVVEPASEREGGE
 REVEDVPKVVEPASEREGGE
 REVEDVPKVVEPASEREGGE
 REVEDVPKVVEPASEREGGE
 REVEDVPGVVEPASGHEGGE
 REVEDVPGVVEPASGHEGGE

Type I: 1, 2, 4, 7, 8
 Type II: 3, 5, 6, 9, 10, 11, 12
 Type III: 13, 14

REVA SQHTKQPSHS
 VSNSAPNQFRNPEGELPFTLPDLSESEIVVPEEQKGRAHP
 QVIPEGAPRG LQPGEYYVQI AVFHDAIQVQ SIVHRYGVEYPIAVEQDIHE
 GKVRFTVCVG PVQKDERGAV
 LENFQRFGFK DAFLKKAR

APPROVED	BY	FIG.
	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 15

T. pallidum subspecies *pertenue*, CDC-2 strain

MFVRSDMFPK NTAVEISNLE KNAKAQAVVI GHAGIPGLV SLAPAAAQL
GIGVYQAVRV RVRTLGTVRG GSQTSQDGLS LASLPSRVPA RPAQRDPLSS
PPAGHTVPEY RDTVIFDDPR LVSPLS

REVEDVPKVVEPASEREGGE
REVEDVPKVVEPASEREGGE
REVEDVPKVVEPASEREGGE
REVEDVPKVVEPASEREGGE

REVA SQHTKQPSHS VSNSAPNQFR NPEGELPFTL PDLSESEIVV
PEEQKGRAHP QVIPEGAPRG LQPGEYYVQI AVFHDAIQVQ SIVHRYGVEY
PIAVEQDIHE GKVRFTVCVG PVQKDERGAV LENFQRFGFK DAFLKKAR

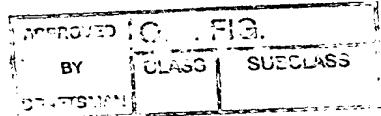


FIG. 16

T. pallidum subspecies *endemicum*, Bosnia strain

MFVRSDMFPK NTAVEISNLE KNAKAQAVVI GHAGIPGLV SLAPAAAQL
GIGVYQAVRV RVRTLGTVRG GSQTSQDGGLS LASLPSRVPA RPAQRDPLSS
PPAGHTVPEY RDTVIFDDPR LVSPLS

REVEDVPKVVEPASEREGGE
REVEDVPKVVEPASEREGGE
REVEDVPKVVEPASEREGGE
REVEDVPKVVEPASEREGGE
REVEDVPKVVEPASEREGGE
REVEDVPKVVEPASEREGGE
REVEDVPKVVEPASEREGGE
REVEDVPKVVEPASEREGGE

REVA SQHTKQPSHSVSNSAPNQFR NPEGELPFTL PDLSESEIVV
PEEQKGRAHP
QVIPEGAPRGLQPGEYYVQI AVFHDAIQVQ SIVHRYGVEY PIAVEQDIHE
GKVRFTVCVGPVQKDERGAV LENFQRFGFK DAFLKKAR

APPROVED: P.G.
BY CLASS SUBCLASS
PERFORMER

Inventor(s): Liu et al.
Express Mail No.: EL874428941US / Date of Deposit: December 14, 2001
Title: DECOMPOSITIONS AND METHODS FOR DETECTING TREPONEMA PALLIDUM
Attorney's Matter No.: 6395-61666/TMH/DJZ
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FIG. 17

T. pallidum subspecies. *pertenue*, CDC-1 strain

MFVRSDMFPK NTAVEISNLE KNAKAQAVVI GHAGIPGLV SLAPAAAQL
GIGVYQAVRV RVRTLGTVRG GSQTSQDGLS LASLPSRVPA RPAQRDPLSS
PPAGHTVPEY RDTVIFDDPR LVSPLSREGGE

REVEDVPKVVEPASEREGGE
REVEDVPKVVEPASEREGGE
REVEDVPKVVEPASEREGGE
REVEDVPKVVEPASEREGGE
REVEDVPKVVEPASEREGGE
REVEDVPKVVEPASEREGGE

REVASQHTK QPSHSVSNSA PNQFRNPEGE LPFTLPDLSE SEIVVPEEQK
GRAHPQVIPE GAPRGLQPGE YYVQIAVFHD AIQVQSIVHR YGVEYPIAVE
QDIHEGKVRF TVCVGPVQKD ERGAVLENFQ RFGFKDAFLK KAR